**ORIGINAL ARTICLE**

# Quality of Tuberculosis (TB) Care in Public and Private Health Facilities in A Rural District of Sindh, Pakistan

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## ABSTRACT

**Objective:** To assess the quality (regarding resources and appropriateness) of tuberculosis(TB) care provided at public and private health facilities in a rural district where directly observed treatment short-course (DOTS) strategy had been implemented.

**Study Design:** A cross-sectional study

**Place and Duration of Study:** Public and private health facilities in the district Thatta, province of Sindh, from January to December, 2004.

**Material and Methods:** All private clinics run by doctors having basic qualification of Bachelor of Medicine, Bachelor of Surgery (MBBS); and in public health sector only DOTS centers were included in the study. Total sample size of 63 was estimated, consists of 21 public and 42 private health facilities. Characteristics of health facilities and health care providers were assessed. Appropriateness of TB care was measured according to National TB control Program (NTP) Pakistan and World Health Organization (WHO) guidelines.

**Results:** Out of total 63, all 16 diagnostic center level facilities (11 public and 05 private) in the district were selected and remaining 47 were treatment centers (10 public and 37 private). Overall, 63.5% of health facilities had adequate waiting area, while in 30% spitting bins were placed. Functioning weighing scales were available at 65% and about 50% had registration system for TB patients. At diagnostic centers 62.5% laboratory In-charges were managing sputum smear slides properly. Only 32.7% of physicians managing TB cases were trained on DOTS.

**Conclusion:** Our study reflects lack of Logistics, supplies, sanitary conditions; and inappropriate TB case management in most of the health facilities especially in private clinics. Training of health care providers on DOTS, involvement of private sector, and implementation of regulatory measures were needed.

**Keywords:** tuberculosis, quality of care, public-private providers, health facility survey.

## INTRODUCTION

Tuberculosis (TB) constitutes a high disease burden in Pakistan.[1-4] TB was declared a national emergency in 2001.[5] The National TB control Program (NTP) Pakistan is responsible for the overall coordination of TB control in the country.[6,7] The targets for NTP Pakistan by 2005 were; 100% directly observed treatment short-course (DOTS) coverage; detect 70% of all cases and successfully treat 85% of them and to reduce prevalence and deaths of tuberculosis by 50% by 2010.[8]

NTP Pakistan has two major services delivery outlets[9] i.e., TB care under DOTS and non-DOTS. In addition, a large number of private health sector comprising private practitioners, private hospitals, voluntary and for-profit organizations have their individual approach in TB control, which is more non-DOTS oriented than DOTS. In the last decade private sector has immensely penetrated in the provision of health care including TB care[10-12] and a larger portion (about 70%) of population is covered by the private health sector in Pakistan.[2] It is essential that every patient be identified, diagnosed and successfully treated. To ensure this is accomplished; usually requires that care of the patients should be standardized.[11]

Avedis Donabedian proposed a conceptual framework for measuring the health care system performance which links structure, processes and outcomes in a model for quality assessment.[13] He described quality as including: structure (viewed as the capacity to provide high quality care), process (now often termed performance), and outcomes. Performance measurement, related to measuring the process of care, often focuses on the diagnosis and management of disease and may also address preventive care such as screening for disease. For an outcome to be valid measures of quality, it must be closely related to processes of care that can be manipulated to affect the outcome.[13]

Local and international studies, over the last few years had documented some components of quality of TB care provided at health facilities.[14-16] Overall 75% of doctors made prescription errors with one or more aspects of treatment.[17] These studies reflect poor awareness of the World Health Organization (WHO) guidelines and low compliance among physicians, and a high rate of loss to follow-up.[18,19] Similarly a cross-sectional survey of public and private clinics for appropriateness of TB care was conducted in Kampala, Uganda.[20] Sixty-three percent of the private health clinics failed to keep follow-up appointments compared to only 30% of the public clinics. In this analysis private clinics were less likely to provide appropriate care as compared to public clinics (odds ratio 0.17).

The present operational research study was conducted with an aim to review TB control Program towards DOTS implementation and quality of services available in the health facilities of a DOTS implemented District according to NTP Pakistan and WHO guidelines.[21]

## MATERIALS AND METHODS

A cross-sectional study was conducted in public and private health facilities of district Thatta during January to December 2004. Thatta is a coastal, rural district in Sindh province of Pakistan, with a population of 1100,000 according to 1998 census. DOTS strategy to control TB was implementedduring 2002 – 2003.Total 11 diagnostic centers including one District Headquarter Hospital (DHQ), four TalukaHeadquarter Hospitals(THQs), six Rural Health Centers(RHCs); and 39 treatment centers (02 RHCs, 31 Basic Health Units, and 06 Government Dispensaries) had been started which were providing TB care under DOTS since September, 2003. In private sector, there were fivesmall private hospitals and polyclinics having laboratory facility of sputum smear microscopy test for Acid Fast Bacilli (AFB); were taken asdiagnostic centers.[22] All private clinics including non-governmental organization (NGO) run centers where doctors having basic qualification of Bachelor of Medicine, Bachelor of Surgery (MBBS) were providing TB treatment; classified as treatment centers.

To obtain the sample size for assessing the quality of care in public and private health settings, a stratified random sample of public and private health facilities was calculated. Various studies have estimated the proportion of inappropriate TB care in private health facilities as 63% and odds ratio of 2.0 for various factors leading to inappropriate TB care.[20,23] We have taken ratio of 1:2 in public to private health facilities, confidence interval of 95% and a sample size of 63 was estimated consists of 21 public and 42 private health facilities. There were total 16 diagnostic center level facilities in the whole district, 11 were public and five were private. All 16 diagnostic centers were selected and remaining 47 treatment centers (10 public and 37 private) were selected through purposive sampling.

This study was implemented after approval by Ethical Review committee of Aga Khan University, Karachi. Pretesting was done in Taluka Halla,District Hyderabad. Written permission was taken from Executive District Officer Health, and District TB Coordinator. After taking written informed consent from In-charge of the facility, information about characteristics of health facility, staffing, their qualifications and training, and facilities available for TB patients was collected by interviewing DOTS Facilitator, Dispenser, and by direct observation with Short Checklist.

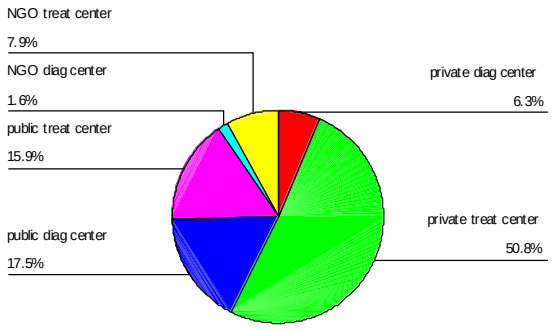
Information was collected by interviewing physicians managing TB cases at the health facilities about their knowledge and practices with respect to NTP Pakistan and WHO guidelines. Information about the methods of screening, diagnosing adult (≥15 years) pulmonary TB patients, categorizing, prescribing treatment regimen, assuring patients' compliance by DOT (directly observed therapy), record keeping and reporting, referral, proper advise, and outcome evaluation was collected.[24] Physicians' viewpoint about TB control activities in their area was also collected. Assessment of available laboratory services for TB patients at diagnostic centers was done through semi-structured interview with laboratory In-charge and On-Site Evaluation with Short Checklist. The information was collected about adequate stock and supplies of; specimen cups, slides, stains, microscopes, laboratory register, waste containers and about waste disposal.

Database was developed in EpiInfo 6.0; all data was entered, and validated. Data analysis was done using SPSS 11.5 program. Frequency distribution of each variable about characteristics of health facility and characteristics of health care providers were examined. The proportion of each response was compared according to type of health facility.

## RESULTS

**Characteristics of and resources available at health facilities surveyed:** A total of 63 health facilities were approached in the study area. Two thirds (42) were private health facilities including five NGO run centers (one diagnostic and four treatment centers). Most of the health facilities (84%) were in rural areas. Out of total 16 diagnostic centers available in whole district, 11 (68.7%) were in public sector (See figure 1). No diagnostic center was available in two Talukas out of nine Talukas. Findings of these public and private health facilities are given in table-1.

Type of health facilities surveyed in District Thatta




n = 63

Table 1: Characteristics of health facilities and health care providers

| Characteristics | Public health facility n = 21 (%) | Private health facility n = 42 (%) |
|---|---|---|
| Waiting area sufficient | 20 (95.2) | 20 (47.6) |
| Spitting Bin present | 10 (47.6) | 9 (21.4) |
| Working weighing scale | 15 (71.4) | 26 (61.9) |
| TB drugs available in the health facility | 19 (90.5) | 4 (9.5) |
| Record keeping tools available | 20 (95.2) | 11 (26.2) |
| Record keeping tools according to DOTS | 17 ( 81) | 00 |
| Physician absent/not found | 6 (28.6) | 2 (4.8) |
| Trained DOTS Facilitator | 13 (61.9) | 00 |

**Characteristics of Laboratories, In-charges and their operating procedures:** There were total 16 diagnostic centers in the whole district, 11 were public (68.75%) and five were private. There was a separate room for laboratory and working microscope available at all centers. There was

adequate supply of specimen cups, slides, slide boxes, reagents, stains, smearing and staining equipment. Chest X-ray (CXR) facility was also available in all diagnostic centers. One laboratory In-charge was a pathologist, two were doctors (having experience in pathology), ten were Lab technicians including one female technician, and three were assistant technicians. Assistant technicians without any qualification were In-charge of three public laboratories. Slides werenot being re-examined at any reference laboratory for quality control (see table 2).

Table 2: Characteristics of Laboratories and of lab In-charges

| Characteristics | Public Lab n = 11 (%) | Private Lab n = 5 (%) |
|---|---|---|
| Separate room and Microscopes available | 11 (100) | 5 (100) |
| Adequate supplies (slides, stains, reagents etc.) | 10 (90.9) | 5 (100) |
| Register/record keeping of TB patients | 11 (100) | 2 (40) |
| Record keeping tools according to DOTS | 10 (91) | 00 |
| Free of cost sputum smear test | 7 (63.6) | 00 |
| Qualified labs' In-charge | 8 (72.7) | 5 (100) |
| Attended training (10 days) under DOTS | 9 (81.8) | 3 (60) |
| Manage slidesproperly | 6 (54.5) | 4 (80) |
| Re-using negative sputum slides | 10 (90.9) | 4 (80) |

**Physician's approach to TB case management:** Physicians were present at 55 (87.3%) health facilities. Out of 21 public health facilities physicians were present 15 centers and were interviewed regarding TB case management. All six physicians were absent/not found at Basic Health Units (BHUs). Two physicians were not present at private diagnostic centers and total 40 physicians at private health facilities were interviewed.

Table 3: Physician's approach to TB case management

| Characteristics | Public health facility n = 15 (%) | Private health facility n = 40 (%) |
|---|---|---|
| Physician trained on DOTS | 11 (73.3) | 7 (17.5) |
| Suspected TB properly | 12 (80) | 35 (87.5) |
| Sputum smear, primary means of diagnosis | 11 (73.3) | 9 (22.5) |
| Advise other correct tests for diagnosis | 8 (53.3) | 17 (42.5) |
| Correct categorization-I | 12 (80) | 6 (15) |
| Correct categorization-II | 10 (66.7) | 3 (7.5) |
| Correct combination-I | 13 (86.7) | 29 (72.5) |
| Correct combination-II | 9 (60) | 6 (15) |
| Supervised treatment according to DOTS | 7 (46.7) | 4 (10) |
| For evaluation, repeated sputum smear test | 8 (53.3) | 3 (7.5) |
| Cure ascertained by sputum test negative | 7 (46.7) | 6 (15) |

There was no physician's fee in all public health facilities and also in two private health facilities (NGO run centers). In less than half of (47.3%) health facilities privacy was provided to TB patients during examination and counseling. One fifth (21.8%) physicians consider that patient's weight is not necessary to calculate dosage of TB drugs. Almost all physicians (98.2%) counsel TB patients but only 31 (57.4%) can share correct messages. Physicians approach to TB case management had been divided into four components of diagnosis, treatment, outcome evaluation, record keeping and reporting (see table 3).

## DISCUSSION

The focus of this study was to assess facilities and services available for TB patients after implementation of DOTS in the district. This study is one of the studies which described the quality of TB care provided by public and private health sector. We came across a study which was carried out in Khyber Pakhtunkhwaof Pakistan;whereonly six TB health facilities were selected from three districts[2]. Their findings in public sector are comparable to our findings but they had found better TB care services in private sector. The major reason is that they had selected TB health facilities in private sector which were considered standard facility types and these were run by International NGOs[2].

Our study revealed thattheTB diagnostic facilities were less in the district and their distribution between rural and urban areas was inappropriate.Though there were adequate supplies at the laboratories but the operating procedures at many laboratories were un-standardized and unhygienic. Free of cost anti-TB drugs were available in almost all public centers. Anti-TB drugs were freely available in the market at medical stores and physicians' prescription was not required to purchase them.Multidrug-resistant TB can develop due to misuseofanti-TB drugs. TrainedDOTS facilitators were appointed at 13 (62%) public health facilities (mostly at diagnostic centers) but most of them were not doing their proposed work due to irrelevant duties or timings. Untrained personnel were unable to facilitate TB patients on DOT and keep their proper records.Findings regarding TB case management in our study were consistent with other studies in Pakistan, focusing on knowledge and practices of physicians managing TB cases.[14,18] Studies in other parts of the world had found less proportion of private health facilities providing inappropriate TB care as compared to our study.[20,23,25,26] This is because the private sector in Pakistan is unregulated and neglected area of health system.For diagnosis;only 36% physicians depended on sputum microscopy that is comparable to other local studies had found 40%, 23%, and 38% family physicians.[2,14,18]

At 76% of health facilities physicians were prescribing correct regimen for intensive phase of new TB patients but at only 27% correct regimen was prescribed for old TB patient. Other studies had found 33%, 39% and 59% correct regimen for newly diagnosed TB patients.[14,20,26] This high percentage of correct regimen for new TB patients in our study would be due to advertisement of a pharmaceutical company having a well-known TB drug with fixed dose combination.

For follow-up and outcome evaluation 20% health facilities were advising sputum microscopy repeatedly. All private and most of the public health facilities did not attempt to contact patients who failed to keep follow-up appointments for treatment. To ascertain cure only 24% were relying on sputum conversion to negative. Rests of the physicians were relying on CXR, erythrocyte sedimentation rate (ESR), physical sign and symptoms,

and completion of treatment period. That reflects poor awareness of the TB case management guidelines.

Our study has limitations.We had done purposive sampling for treatment centers;however these centers were selected from many different sites of district Thatta, to make it more representative. Six physicians were absent at treatment centers (BHUs), and two were not available at private hospitals (Diagnostic centers).Verification of information at private health facility was only possible if they were maintaining the records.Although the study is showing clear picture of TB care services; however the situation might be different in urban district and districts of other provinces.

## CONCLUSION

Our study highlights the deficiencies in the resources,lack of trained health personnel and poor awareness of national TB guidelines in both sectors but situation was worse in private sector. Laboratory services in private sector were of better quality as compared to many public laboratories but these were fewer and tests were costly. DOTS coverage was not universal; implemented in selective areas and selective public health facilities. Private sector was neglected, and working without any regulatory measures. NGOs were taking interest in TB care and one NGOhad started implementation of DOTSin its health facilities in coordination with NTP Pakistan.

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